REMARKS

Claims 1-23 are pending in this application. Applicant has amended claim 1 and presents new claims 4-23. Applicant requests reconsideration of this application in view of the foregoing amendments and the following remarks.

Please change the title from "SCALABLE VIRTUAL WORLD CHAT CLIENT-SERVER SYSTEM" to "SYSTEM AND METHOD FOR ENABLING USERS TO INTERACT IN A VIRTUAL SPACE." It is believed that the new title is more descriptive of the subject invention.

Claims 1-3 stand rejected under the judicially created doctrine of double patenting over Claims 1-5 of U.S. Patent No. 6,219,045 B1. An appropriate terminal disclaimer, along with the requisite fee, is submitted herewith. Therefore, Applicant believes that this rejection has been overcome.

Claims 1-3 stand rejected under U.S. Patent No. 5,491,743 to Shiio et al ("Shiio"). In view of the amendment of Claim 1 and the following remarks, Applicant submits that this rejection has been overcome.

Shiio discloses a virtual conference system wherein a central control apparatus controls the process of having a virtual conference. Thus, participants contact the central control apparatus to initiate or join a virtual conference. The central control apparatus determines who may participate in the virtual conference and what participants will be displayed.

Claim 1, as amended, recites "means, on the digital computer executing the particular user's client process, for receiving positions of the users of the other client processes according to the protocol via the central server process and for determining from the positions of the users of the other client processes which of the users to render." Shiio fails teach or suggest a system

in which a client process determines the other users that are to be displayed. As such, Claim 1, and the claims that depend therefrom, are patentable over Shiio.

New Claims 4-23 are also patentable over Shiio. Independent Claim 4 is directed to a method for enabling a first user to interact with other users in a virtual space. The first user and the other users each have an avatar and a client process associated therewith. Each client process is in communication with a server process.

The method of Claim 4 includes the steps of (a) receiving data relating to motion of at least some of the other users' avatars from the server process and (b) determining from the data a set of the other users' avatars that are to be displayed to the first user. Shiio fails to teach or suggest a method that determines a set of the other users' avatars that are to be displayed to the first user. As such, Claim 4, and the claims that depend therefrom, are patentable over Shiio.

Independent Claim 9 is directed to a method for enabling a first user to interact with other users in a virtual space. The first user and the other users each have an avatar and a client process associated therewith. Each client process is in communication with a server process.

The method of Claim 9 includes the steps of (a) obtaining a perspective of the first user's avatar based on motion of the first user's avatar; (b) receiving data relating to motion of at least some of the other users' avatars from the server process; (c) determining from the data received in step (b) a set of the other users' avatars that are to be displayed to the first user; and (d) displaying the set of the other users' from the perspective of the first user's avatar. Shiio fails to teach or suggest a method that determines a set of the other users' avatars that are to be displayed to the first user. As such, Claim 9, and the claims that depend therefrom, are patentable over Shiio.

Independent Claim 15 is directed to a method for enabling two users to interact in a virtual space. The first user has a first computer associated therewith; the first computer has a

first client process associated therewith; and the first client process has a first avatar associated therewith. The second user has a second computer associated therewith; the second computer has a second client process associated therewith; and the second client process has a second avatar associated therewith. The first and second client processes are in communication with a server process.

The method of Claim 15 include the steps of (a) monitoring movement of the first and second avatars by the first and second client processes, respectively; (b) transmitting data indicating the movement of the first and second avatars by the first and second client processes, respectively, to the server process; (c) transmitting the data indicating the movement of the first and second avatars, by the server process, to the second and first client processes, respectively; and (d) determining, by the second and first client processes, from the data indicating the movement of the first and second avatars, respectively, whether to display the first and second avatars. Shiio fails to teach or suggest a method in which second and first client processes determine from the data indicating the movement of the first and second avatars, respectively, whether to display the first and second avatars. As such, Claim 15, and the claims that depend therefrom, are patentable over Shiio.

Independent Claim 18 is directed to a method for enabling a plurality of users to interact in a virtual space. Each user has a computer associated therewith; each computer has a client process associated therewith; each client process has an avatar associated therewith; and each client process is in communication with a server process.

The method of Claim 18 includes the steps of (a) monitoring, by each client process, movement of the avatar associated with the client process; (b) transmitting, by each client process to the server process, data indicating the movement of the avatar associated with the client process; (c) transmitting, by the server process to each client process, the data indicating

movement of at least some of the avatars that are not associated with the client process; and (d) determining from the data transmitted in step (c), by each client process, at least some of the avatars that are not associated with the client process that are to be displayed. Shiio fails to teach or suggest a method in which each client process determines at least some of the avatars that are not associated with the client process that are to be displayed. As such, Claim 18, and the claims that depend therefrom, are patentable over Shiio.

Independent Claim 21 is directed to a server implemented method for enabling interaction between a plurality of users in a virtual space. Each user has a computer associated therewith; each computer has a client process associated therewith; and each computer is in communication with the server.

The method of Claim 21 includes the steps of (a) creating a user object for each of the plurality of users; (b) creating a room object for each room in the virtual space that is occupied by at least one of the plurality of users; (c) receiving data indicating a room, position, and orientation of each user from the user's client process; and (d) synchronously disseminating to each of the client processes a packet of information updating a list of avatars displayable by the client process so that the client process can determine from the packet a set of avatars that are to be displayed. Shiio fails to teach or suggest a method in which a server synchronously disseminates to each of the client processes a packet of information updating a list of avatars displayable by the client process so that the client process can determine from the packet a set of avatars that are to be displayed. As such, Claim 21 is patentable over Shiio.

Independent Claim 22 is directed to a method for operating a server to enable a plurality of users to interact in a virtual space. Each user has a computer associated therewith; each computer has a client process associated therewith; and each client process has an avatar

associated therewith. The server also has a process associated therewith and each client process is in communication with the server process.

The method of Claim 22 includes the steps of (a) receiving, from each client process by the server process, data indicating a position of the avatar associated with the client process; and (b) synchronously disseminating to each of the client processes a packet of information updating a list of avatars displayable by the client process so that the client process can determine from the packet a set of avatars that are to be displayed. Shiio fails to teach or suggest a method in which a server synchronously disseminates to each of the client processes a packet of information updating a list of avatars displayable by the client process so that the client process can determine from the packet a set of avatars that are to be displayed. As such, Claim 22 is patentable over Shiio.

Independent Claim 23 is directed to an apparatus for enabling a first user to interact with other users in a virtual space. The first user and the other users each have an avatar associated therewith. The apparatus comprises a first process associated with the first user, other client processes associated with the other users, and a server process in communication with the first client process and the other client processes.

Each of the other client processes is operable to monitor movement of the avatar associated with the other user and transmit data relating to the movement of the avatar to the server process. The server process is operable to receive the data relating to the movement of the avatars associated with the other users and transmit the data relating to the movement of the avatars associated with at least some of the other users to the first client process. The first client process is operable to receive the data relating to the movement of the avatars associated with at least some of the other users and determine from the data it receives a set of the other users' avatars that are to be displayed. Shiio fails to teach or suggest an apparatus in which a first client

process is operable to determine from the data it receives a set of the other users' avatars that are to be displayed. As such, Claim 23 is patentable over Shiio.

Applicant has submitted with the Information Disclosure Statement filed herewith a copy of an article entitled "Valentine's Day Wedding In A Virtual World," Newsbytes, February 14, 1996 ("Newsbytes"). This reference was applied by the Examiner in the parent application to reject certain of the claims therein, which claims were ultimately allowed and are included in U.S. Patent No. 6,219,045 B1. Applicant anticipates the Examiner's application of Newsbytes to the claims in this case. In an effort to expedite the prosecution of this application, Applicant therefore opts to address the Newsbytes article at this time.

Applicant asserts that Newsbytes is not prior art to this application (nor was it prior art in the parent application). Indeed, the priority date of this application (and the parent application) is November 13, 1995. This priority date predates the February 14, 1996 date of the Newsbytes reference. As such, Newsbytes should not be considered in the determination of the patentability of the claims of this application.

Nevertheless, even if Newsbyte were to be considered relative to the patentability of the claims of this application, Claims 1-3, 5-8, and 10-23 are patentable over Shiio in view of Newsbytes.

Newsbytes discloses a wedding that is conducted in a virtual world. The wedding is attended by selected guests and participants, while other subscribers are only allowed to see the wedding but otherwise are invisible to each other. Newsbytes does not disclose how the display of participant avatars is limited. However, any reasonable interpretation would conclude that a central server process is used to limit the number of displayable avatars. For example, if thousands of participants log into the CompuServe system to see the virtual wedding, it would be most logical to have the CompuServe system determine which participants are to be displayed,

since all of the participants would then see the same display. It would not be logical to try to download thousands of avatars to each participant computer system, and then expect each participant system to process them.

Indeed, each of Claims 1-3, 5-8, and 10-23 include a recitation that it is a client process associated with a user that determines which of the avatars associated with other users are to be displayed. As such, the foregoing Claims are patentable over Shiio in view of Newsbytes.

For the reasons set forth above, all of the pending claims are patentable over the references of record and are now in condition for allowance. An early allowance of the all claims is earnestly solicited.

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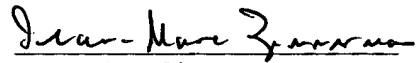
Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend Claim 1 as follows:

1. (Amended) An apparatus for interaction between a plurality of users in a three-dimensional, computer-generated graphical space, comprising:

a plurality of client processes, wherein each client process is executed on a digital computer distinct from the digital computers executing others of the plurality of client processes;

a central server process, executed by a server computer;

a network coupling the server computer to the digital computers which execute the plurality of client processes, thereby coupling the plurality of client processes with the central server process;

a plurality of user objects, executed as subprocesses of the central server process, wherein each of the plurality of user objects is associated with a user in the plurality of users;

an environment database, accessible by each client process;

means for communicating a position of a particular user in the three-dimensional, computer-generated graphical space from the particular user's client process to the other client processes via the central server process, the means for communicating programmed according to a protocol;

means, on a digital computer executing the particular user's client process, for receiving positions of the users of the other client processes according to the protocol via the central server process and for determining from the positions of the users of the other client processes which of the users to render;

and means, on the digital computer executing the particular user's client process, for rendering a three-dimensional view from a viewpoint of the location of the particular

user, the rendered view including at least one object from the environment database and, when other users are at locations viewable from the rendered viewpoint, including those other viewable users as determined by the digital computer executing the particular user's client process.

Please add the following new claims:

4. A method for enabling a first user to interact with other users in a virtual space, wherein the first user and the other users each have an avatar and a client process associated therewith, and wherein each client process is in communication with a server process, comprising:

(a) receiving data relating to motion of at least some of the other users' avatars from the server process; and

(b) determining from the data a set of the other users' avatars that are to be displayed to the first user.

5. The method of Claim 4, wherein

step (a) comprises receiving, by the client process associated with the first user, data relating to motion of at least some of the other users' avatars from the server process and

step (b) comprises determining, by the client process associated with the first user, from the data a set of the other users' avatars that are to be displayed to the first user.

6. The method of Claim 5, further comprising the steps of

(c) monitoring motion of the first user's avatar; and

(d) displaying the set of the other users' avatars from the perspective of the first user's avatar as monitored is tep (c),

wherein steps (c) and (d) are performed by the client process associated with the first user.

7. The method of Claim 5, wherein step (a) comprises

(a)(1) receiving data relating to a position and orientation of at least some of the other users' avatars from the server process.

8. The method of Claim 5, wherein step (b) comprises

(b)(1) determining from the data an actual number of the other users' avatars;

(b)(2) determining a maximum number of the other users' avatars that can be displayed; and

(b)(3) comparing the actual number to the maximum number to determine which of the other users' avatars are to be displayed.

9. A method for enabling a first user to interact with other users in a virtual space, wherein the first user and the other users each have an avatar and a client process associated therewith, and wherein each client process is in communication with a server process, comprising:

(a) obtaining a perspective of the first user's avatar based on motion of the first user's avatar;

(b) receiving data relating to motion of at least some of the other users' avatars from the server process;

(c) determining from the data received in step (b) a set of the other users' avatars that are to be displayed to the first user; and

(d) displaying the set of the other users' from the perspective of the first user's avatar.

10. The method of Claim 9, wherein step (c) comprises

(c)(1) determining from the data received in step (b), by the client process associated with the first user, a set of the other users' avatars that are to be displayed to the first user.

11. The method of Claim 10, wherein step (b) comprises

(b)(1) receiving data indicating a position of at least some of the other users' avatars from the server process.

12. The method of Claim 10, wherein step (b) comprises

(b)(1) receiving data indicating an orientation of at least some of the other users' avatars from the server process.

13. The method of Claim 10, further comprising the steps of

(e) receiving, by the server process, data relating to motion of the first user's avatar;

(f) receiving, by the server process, the data relating to the motion of at least some of the other users' avatars; and

(g) automatically sending (1) the data relating to the motion of the first user's avatar to each of the client processes associated with the other users and (2) the data relating to

the motion of the at least some of the other users' avatars to the client process associated with the first user.

14. The method of Claim 10, wherein step (c) comprises

(c)(1) determining from the data an actual number of the other users' avatars;

(c)(2) determining a maximum number of the other users' avatars that can be displayed; and

(c)(3) comparing the actual number to the maximum number to determine which of the other users' avatars are to be displayed.

15. A method for enabling two users to interact in a virtual space, wherein the first user has a first computer associated therewith, wherein the first computer has a first client process associated therewith, wherein the first client process has a first avatar associated therewith,

wherein the second user has a second computer associated therewith, wherein the second computer has a second client process associated therewith, wherein the second client process has a second avatar associated therewith, and

wherein the first and second client processes are in communication with a server process, comprising:

(a) monitoring movement of the first and second avatars by the first and second client processes, respectively;

(b) transmitting data indicating the movement of the first and second avatars by the first and second client processes, respectively, to the server process;

(c) transmitting the data indicating the movement of the first and second avatars, by the server process, to the second and first client processes, respectively; and

(d) determining, by the second and first client processes, from the data indicating the movement of the first and second avatars, respectively, whether to display the first and second avatars.

16. The method of Claim 15, further comprising the step of

(e) displaying the first and second avatars when it is determined in step (d) that the first and second avatars are to be displayed.

17. The method of Claim 15, wherein step (c) comprises automatically sending the data indicating a position of the first and second avatars, by the server process, to the second and first client processes, respectively.

18. A method for enabling a plurality of users to interact in a virtual space, wherein each user has a computer associated therewith, wherein each computer has a client process associated therewith, wherein each client process has an avatar associated therewith, and wherein each client process is in communication with a server process, comprising:

(a) monitoring, by each client process, movement of the avatar associated with the client process;

(b) transmitting, by each client process to the server process, data indicating the movement of the avatar associated with the client process;

(d) transmitting, by the server process to each client process, the data indicating movement of at least some of the avatars that are not associated with the client process; and

(d) determining from the data transmitted in step (c), by each client process, at least some of the avatars that are not associated with the client process that are to be displayed.

19. The method of Claim 18, wherein the step (c) comprises the step of automatically transmitting, by the server process to each client process, the data indicating the movement of at least some of the avatars that are not associated with the client process.

20. The method of Claim 18, wherein step (d) comprises

(d)(1) determining an actual number of avatars that are not associated with the client process based on the data transmitted by the server process;

(d)(2) determining a maximum number of avatars that can be displayed; and

(d)(3) comparing the actual number to the maximum number to determine which of the avatars are to be displayed.

21. A server implemented method for enabling interaction between a plurality of users in a virtual space, wherein each user has a computer associated therewith, wherein each computer has a client process associated therewith, and wherein each computer is in communication with the server, comprising:

(a) creating a user object for each of the plurality of users;

(b) creating a room object for each room in the virtual space that is occupied by at least one of the plurality of users;

(c) receiving data indicating a room, position, and orientation of each user from the user's client process; and

(d) synchronously disseminating to each of the client processes a packet of information updating a list of avatars displayable by the client process so that the client process can determine from the packet a set of avatars that are to be displayed.

22. A method for operating a server to enable a plurality of users to interact in a virtual space, wherein each user has a computer associated therewith, wherein each computer has a client process associated therewith, wherein each client process has an avatar associated therewith, wherein the server has a process associated therewith, and wherein each client process is in communication with the server process, comprising:

(a) receiving, from each client process by the server process, data indicating a position of the avatar associated with the client process; and

(b) synchronously disseminating to each of the client processes a packet of information updating a list of avatars displayable by the client process so that the client process can determine from the packet a set of avatars that are to be displayed.

23. An apparatus for enabling a first user to interact with other users in a virtual space, wherein the first user and the other users each have an avatar associated therewith, and wherein the apparatus comprises a first process associated with the first user, other client processes associated with the other users, and a server process in communication with the first client process and the other client processes, wherein

(a) each of the other client processes is operable to

1. monitor movement of the avatar associated with the other user;

2. transmit data relating to the movement of the avatar to the server process;

(b) the server process is operable to

1. receive the data relating to the movement of the avatars associated with the other users;

2. transmit the data relating to the movement of the avatars associated with at least some of the other users to the first client process; and

(c) the first client process is operable to

1. receive the data relating to the movement of the avatars associated with at least some of the other users; and

2. determine from the data received in (c)(1) a set of the other users' avatars that are to be displayed.